Part V:
Direct From Phoenix Fire
Frequently Asked Questions & Other Information
(Taken Directly from Its "800 MHz Trunked Radio Network" Website)

With its move to adopt trunking technology, the Phoenix Fire Department has placed an extensive "Frequently Asked Questions" section on its website, along with other information about the Phoenix trunked radio network. Some of that information is re-produced here verbatim. To see the entire website's content, visit: http://www.phoenix.gov/fire/800.html

Q: Why has it taken to long to get this radio system operational?

When the Phoenix Fire Department began looking at how we would implement this radio system, we quickly became concerned about how it would operate in a hazard zone where good communication could be the difference between life and death. So, we decided to halt putting these radios in our fire fighters hands until we could ensure that they were safe. After years of testing we are almost there for hazard zone incidents. In the mean time, this radio system will work very well for us for non-hazard zone incidents which are 80% of our call volume.

Q: Why do we have to switch to this trunked radio system?

In the late 1990's the City of Phoenix wanted to have all radio communication on one radio system. One radio system means wider radio coverage, greater functionality, a greater cost savings and interoperability between all city departments. All other city departments have already switched over to the trunked radio system and have had great success with it. We are the last city department to switch over.

Q: What is a trunked radio system?

In its most basic terms, a computer picks the frequency you will use. When you key up your radio to talk, it transmits a radio signal to a computer (trunking) and takes that signal and dedicates a frequency to it. This "frequency sharing" means that we have more channels available for us to use. When you are done transmitting the frequency goes back into a "pool" waiting for the next user.

Q: How big is the 800 MHz trunked radio system and how much of the valley will be covered?

How cool would it be to talk on a portable radio from a street corner in downtown Mesa to a portable radio in downtown Buckeye. Well, that's exactly what will happen with the 800MHz radios. The coverage of this trunked radio system is so good that you will be able to hear crews

radio traffic from across town. Who cares you say? How about the fact that we have Rescues, BC's, and Special Ops trucks that regularly travel great distances to incidents all over the city. Now, these units will be able to monitor incidents without waiting to hear radio traffic until they are a few blocks away.

Q: I have heard that this trunked radio system is unsafe for firefighters?

This trunked radio system is an excellent system and will be an advantage to us in non-hazard zone calls. When we initially began to test this system we quickly identified that it is not well suited for hazard zone calls. Because this trunked system relies on a "talk-permit-tone" which is a tone that signals you to begin talking and the system will "bonk" or give an audible tone that says you don't have "permission" to talk. This is not well suited to fire fighters who need to get out a May-Day or Emergency Traffic call for help. We need the ability to talk over one another's radio traffic in an emergency. The Phoenix Fire Department has done extensive testing and has a solution that will render these radios safe to use in the hazard zone. Once we implement this trunked radio system for non-hazard zone calls we will begin the process of getting us ready for full transition into the 800MHz trunked radio system for all incidents.

Q: I have heard that we can't talk in buildings with these radios?

Think of these 800MHz radios as a cell phone. If you are in a building and have no cell phone coverage you will not be able to call the person standing next to you in the building. These radios are the same. If you lose radio signal in a building you will not be able to talk to another radio in that building. This is not usually as critical in non-hazard zone incidents. We all have had to call AHQ from a landline because we could not get out on our current VHF radios. Keep in mind that all the testing we have done has shown that these trunked radios have performed better than our current VHF radios. No matter how well a system is designed, it is difficult to provide in-building coverage to all buildings. With any radio system you will have "dead zones" and certain buildings that will make communication difficult. We have the same issues with our current radios. Anyone ever try to talk on your radios from the basement of any hospital in town? Good luck.

Q: Why do we need interoperability anyway?

9/11 showed us that we need a radio system that would allow all responders the ability to communicate with each other to coordinate significant events in our community. The relationships we have made in the valley are a model used for the rest of the country. Now with the interoperable radios we have become more effective in our ability to coordinate efforts with all local, state, federal and private entities using a single radio system instead of having to use 4 or 5 radios and personnel to do what one radio allows us to do. Interoperability means we can do our jobs more effectively, safely and quicker for Mrs. Smith.

Q: Why are we changing?

In a sentence - There are a limited number of radio frequencies available with our current VHF radio system. Imagine a line that stretches from 1 to 1,000, each number along the line represents a radio frequency - there are only so many available. This span of frequencies is called "spectrum." The FCC controls spectrum and public safety agencies face tremendous competition from wireless service providers (e.g., pagers, cell phones, television, etc.) for spectrum (frequencies).

Several frequencies of spectrum that lie close together in spectrum are called "bands." Historically, the FCC distributed these bands as technology made them available. This practice resulted in consumers being spread throughout spectrum. Currently, public safety communications cover more than 10 different bands. This is a problem because there isn't a commercially available

radio that can cover several bands, much less 10 bands. Basically, one radio can't communicate with all public safety communities - you would have to carry 10 separate radios to communicate with all of them.

We know that big emergencies require big support and coordination. Fire, PD, EMS, automatic aid, mutual aid, other city & state agencies, etc. need to communicate with each other to solve problems and ensure the safety of personnel. Simply put, we require the ability of two different agencies to communicate with each other, on demand, and in real time. Chief Khan would say that Mrs. Smith has an expectation from the Phoenix Fire Department, it doesn't matter where she's at or what type of services she needs, that fire fighters will show up and they'll be able to coordinate their efforts and talk to each other to solve her problem.

More on Trunking & Operations from Phoenix Fire

Positives and Negatives about Trunking:

Positive – Trunked radios allow a large number of radio users to have individual talkgroups (channels) while sharing a pool of frequencies over a large geographical area.

Positive – Talkgroups (channels) can be joined together for interoperability.

Negative – The ability to communicate is dependant on the radio user's connectivity with a repeater. If the radio cannot reach a repeater, the user will not be able to communicate

Daily Checks When Using Trunked Radios

Ensure each position has a portable radio assigned to them
Check for physical damage to the radio
Change battery on radio once a month
Check all knobs to ensure proper operation
On VHF - check battery charge by depressing the PTT, if red light on portable is solid the battery is fully charged
If radio is dirty, clean with a damp cloth

Operations with Trunked Radios

Face to face communication is always the preferred method
Know Emergency Traffic procedures
Know May Day procedures
Hold radio 1" to 2" from face
Speak clearly and slowly
On 800's - Speaking loudly can distort the digital audio
All radio traffic should be concise
Each member must carry a radio into the hazard zone
Use the order model for radio communication
Know what you are going to say before you say it
Call signs for members that are away from their crew
On 800's - proper keying of PTT, 1-2 second delay until talk-permit-tone is heard
Radios should be protected from prolonged exposure to water
Protect portables from heat by using turnout coat pocket
Use speaker mics when possible to minimize damage to radios
Be professional